



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

**SPECfp®2006 = 15.8**

HP Integrity rx2620 (1.6GHz/18MB Dual-Core Intel Itanium 2)

**SPECfp\_base2006 = 15.2**

CPU2006 license: 03

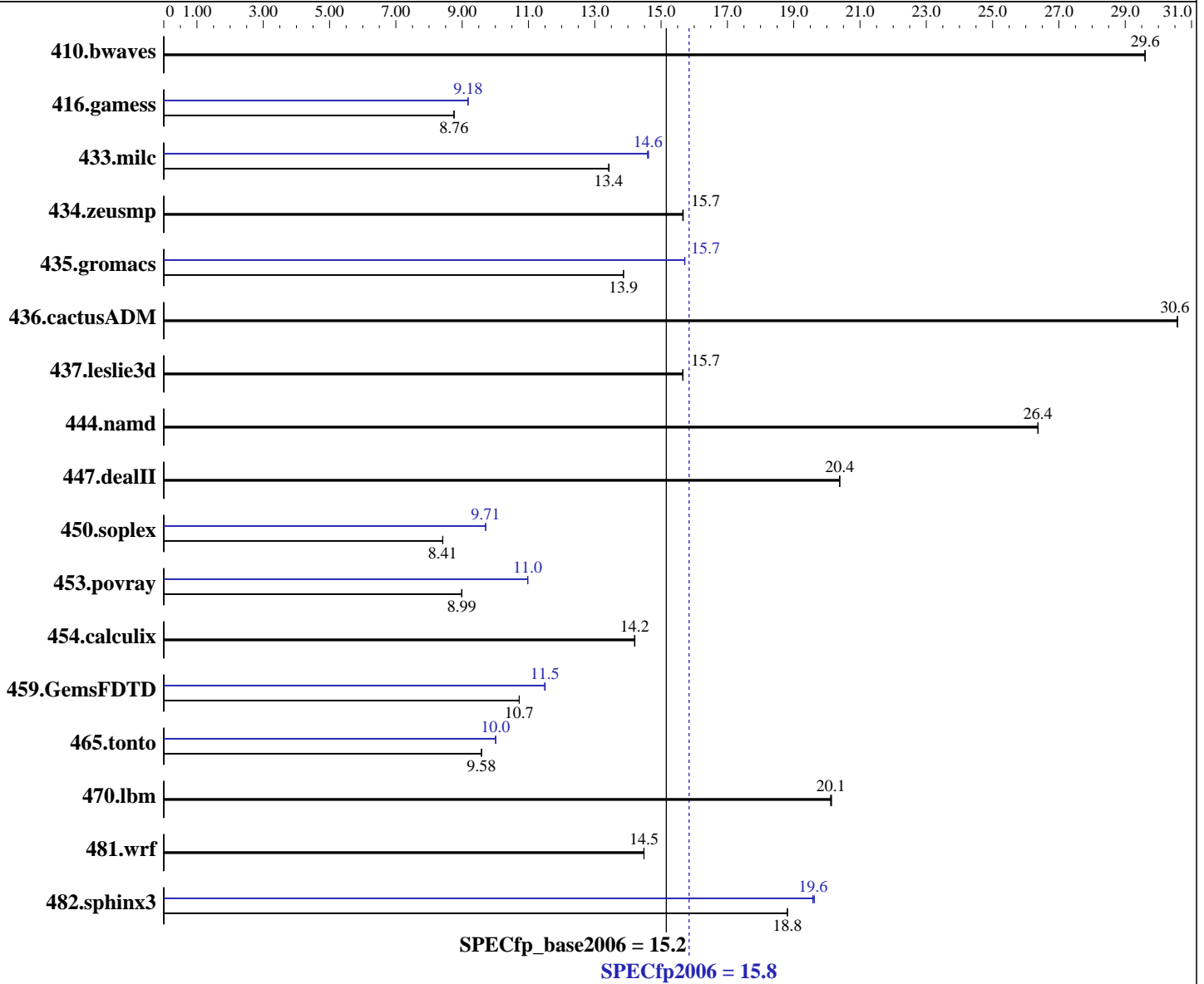
Test date: Sep-2006

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



**Hardware**

CPU Name: Dual-Core Intel Itanium 2 9040  
 CPU Characteristics: 1.6GHz/18MB, 400MHz FSB  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip  
 CPU(s) orderable: 1-2 chips  
 Primary Cache: 16 KB I + 16 KB D on chip per core  
 Secondary Cache: 1 MB I + 256 KB D on chip per core

**Software**

Operating System: HPUX11i-TCOE B.11.23.0609  
 Compiler: HP C/aC++ Developer's Bundle C.11.23.12  
 HP Fortran90 Compiler B.11.23.32  
 Auto Parallel: No  
 File System: vxfs  
 System State: Multi-user  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: None

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L3 Cache: 9 MB I+D on chip per core  
Other Cache: None  
Memory: 24 GB (12x2GB DIMMs)  
Disk Subsystem: 36GB 15K RPM SCSI  
Other Hardware: None

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	459	29.6	459	29.6	<b>459</b>	<b>29.6</b>	459	29.6	459	29.6	<b>459</b>	<b>29.6</b>
416.gamess	2237	8.75	<b>2236</b>	<b>8.76</b>	2236	8.76	<b>2133</b>	<b>9.18</b>	2133	9.18	2135	9.17
433.milc	<b>684</b>	<b>13.4</b>	684	13.4	683	13.4	<b>628</b>	<b>14.6</b>	628	14.6	629	14.6
434.zeusmp	581	15.7	581	15.7	<b>581</b>	<b>15.7</b>	581	15.7	581	15.7	<b>581</b>	<b>15.7</b>
435.gromacs	515	13.9	<b>515</b>	<b>13.9</b>	515	13.9	<b>454</b>	<b>15.7</b>	454	15.7	455	15.7
436.cactusADM	391	30.6	391	30.6	<b>391</b>	<b>30.6</b>	391	30.6	391	30.6	<b>391</b>	<b>30.6</b>
437.leslie3d	<b>600</b>	<b>15.7</b>	601	15.7	600	15.7	<b>600</b>	<b>15.7</b>	601	15.7	600	15.7
444.namd	304	26.4	<b>304</b>	<b>26.4</b>	304	26.4	304	26.4	<b>304</b>	<b>26.4</b>	304	26.4
447.dealII	561	20.4	<b>561</b>	<b>20.4</b>	561	20.4	561	20.4	<b>561</b>	<b>20.4</b>	561	20.4
450.soplex	991	8.42	<b>991</b>	<b>8.41</b>	992	8.41	858	9.72	859	9.71	<b>859</b>	<b>9.71</b>
453.povray	<b>592</b>	<b>8.99</b>	592	8.98	592	8.99	485	11.0	<b>485</b>	<b>11.0</b>	485	11.0
454.calculix	580	14.2	<b>581</b>	<b>14.2</b>	581	14.2	580	14.2	<b>581</b>	<b>14.2</b>	581	14.2
459.GemsFDTD	989	10.7	<b>990</b>	<b>10.7</b>	990	10.7	922	11.5	<b>923</b>	<b>11.5</b>	924	11.5
465.tonto	1027	9.59	<b>1027</b>	<b>9.58</b>	1027	9.58	982	10.0	983	10.0	<b>983</b>	<b>10.0</b>
470.lbm	<b>683</b>	<b>20.1</b>	683	20.1	682	20.1	<b>683</b>	<b>20.1</b>	683	20.1	682	20.1
481.wrf	771	14.5	771	14.5	<b>771</b>	<b>14.5</b>	771	14.5	771	14.5	<b>771</b>	<b>14.5</b>
482.sphinx3	<b>1036</b>	<b>18.8</b>	1036	18.8	1036	18.8	993	19.6	996	19.6	<b>995</b>	<b>19.6</b>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

The system had the September 2006 HP-UX 11i v2 Technical Computing Operating Environment (TCOE) and compilers installed, along with the following patches:

```

PHSS_34858 linker + fdp cumulative patch
PHSS_34853 Math Library Cumulative Patch
PHSS_34854 Integrity Unwind Library
PHSS_34855 HP C Compiler (A.06.12)
PHSS_34856 aC++ Compiler (A.06.12)
PHSS_34857 u2comp/be/plugin library patch
PHSS_34395 FORTRAN I/O Library [libIO77]
PHSS_34397 FORTRAN Intrinsics [libF90 B.11.23.17]
PHSS_34399 Fortran Product Patch, v3.1 to v3.1.1
PHKL_34020 Perfmon enhancements and Itanium Dual-Core

```

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## Operating System Notes (Continued)

The following kernel tunables were set, in addition to the defaults set by the Technical Computing OE:

```
dbc_max_pct=20
dbc_min_pct=20
maxdsiz=3221225472
maxssiz=401604608
```

## Platform Notes

The "cpuconfig" EFI command was used prior to booting to deconfigure processors.

Although two cores were enabled during testing, the SPEC CPU2006 benchmarks used only one core.

## Base Compiler Invocation

C benchmarks:

```
/opt/ansic/bin/cc -Ae
```

C++ benchmarks:

```
/opt/aCC/bin/aCC -Aa
```

Fortran benchmarks:

```
/opt/fortran90/bin/f90
```

Benchmarks using both Fortran and C:

```
/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90
```

## Base Portability Flags

```
453.povray: -DSPEC_CPU_NEED_INVHYP
```

```
454.calculix: -DSPEC_CPU_NOZMODIFIER
```

```
481.wrf: -DNOUNDERSCORE +noppu
```

## Base Optimization Flags

C benchmarks:

```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
```

C++ benchmarks:

```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
```

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## Base Optimization Flags (Continued)

Fortran benchmarks:

+Ofaster -Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N

Benchmarks using both Fortran and C:

+Ofaster(-hp\_cc) +Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Ofaster(-hp\_f90) -Wl,-N

## Peak Compiler Invocation

C benchmarks:

/opt/ansic/bin/cc -Ae

C++ benchmarks:

/opt/aCC/bin/aCC -Aa

Fortran benchmarks:

/opt/fortran90/bin/f90

Benchmarks using both Fortran and C:

/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

## Peak Portability Flags

453.povray: -DSPEC\_CPU\_NEED\_INVHYP  
454.calculix: -DSPEC\_CPU\_NOZMODIFIER  
481.wrf: -DNOUNDERSCORE +noppu

## Peak Optimization Flags

C benchmarks:

433.milc: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N

470.lbm: basepeak = yes

482.sphinx3: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap

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## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: basepeak = yes

450.soplex: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N

453.povray: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl,-a,archive\_shared -Wl,+pd,64M  
-Wl,+pi,64M

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: +Ofaster -Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M  
+Odataprefetch=direct -Wl,-N

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
-Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M  
+Odataprefetch=direct -Wl,-N

465.tonto: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
-Wl,-a,archive\_shared -Wl,+pd,64M -Wl,+pi,64M  
+Odataprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)  
+Ofaster(-hp\_cc) +Otype\_safety=ansi -Wl,-a,archive\_shared  
-Wl,+pd,64M -Wl,+pi,64M +Onoparmsoverlap +Ofaster(-hp\_f90)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.06.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.html)



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You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.06.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.xml)

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